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**Suicides and Deaths from Traffic Accidents in Greece:
The Impact of the Recent Economic Crisis**

ABSTRACT

Suicides and deaths from traffic accidents may depend on economic variables such as the rate of growth of output, the growth of per capita income and the unemployment rate. According to mass media reports, the Greek economic recession appears to be associated to a rapid rise in the suicide rate. On the other hand, the decline in the number of deaths from traffic accidents, which also might be an effect of the current economic crisis, has received less attention. This study uses data from 1960 till the most recent available of 2012 to examine both assertions. The empirical evidence supports both claims and the overall impact seems to be positive. The number of deaths decline with economic crises.

Keywords: Greece, Economic Crisis, Suicides, Traffic Accidents

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1. Introduction

In ancient Greece, the stoic philosophers stated that there is *nothing bad without good*. Economic crises are almost a "natural" phenomenon recurring in frequencies, creating a business cycles, so common and unpredictable as earthquakes. If stoics are correct, then an economic crisis must produce both good and bad things. What are these? Nothing has more value than human life itself. Studies have shown that a recession increases the number of suicides¹. Undoubtedly, if it is true, as many studies claim, then nothing can be worse than the loss of human life. This is the real tragedy of an economic crisis. What is then the good thing of an economic crisis, if any, that could counterbalance the loss of human lives from suicides? A comparison can be made only if lives are saved due to an economic crisis. Deaths from fatal traffic accidents appear to be pro-cyclical, i.e. increase with economic booms and decrease with recessions². This has not received much attention in the media because bad news (suicides) sell better than good news (less deaths from traffic accidents).

Very few would disagree that the best for any society is to have zero suicides and zero deaths from traffic accidents. The cost is an issue. Policies to achieve both objectives should be promoted and be implemented but these are not the subject of this study³. The economic and primarily the non-economic literatures have discussed such prevention policies for both suicides⁴ and traffic accidents⁵. Some thoughts on policies based on this paper's evidence are expressed in section five of this paper.

¹A survey of socio-economic studies on suicide is given by Chen et al (2012). Their study provides a meta analysis of empirical studies and presents the various explanatory variables used in the relevant literature. This is further discussed below in the empirical section of this paper.

²A number of studies have documented that total deaths are pro-cyclical. An increase in economic activity requires higher traffic which results to more accidents and therefore more fatalities. Krüger (2013) finds that during economic booms traffic fatalities increase and decrease with unemployment. More recently, Castillo-Manzano et al (2015) find a non-linear relationship between deaths from traffic accidents and the economic performance of a country. Similar are the results of Haaland & Telle (2015). Bonamore et al (2015) find a non-linear relation (U-shaped) between unemployment and death from all causes including suicides and traffic accidents. At low levels of unemployment (less than 17%), and increase in unemployment lowers mortality. At higher levels of unemployment, a further increase raises mortality.

³ Most of the prevention policies are related to medical and psychological support. For an example of such a study see Lynch (2014).

⁴This relates to the nature of suicides. If non-economic factors are important, then (macro) economic policy has little to do with this. For example, Andrés et al (2011) using an econometric time series model and co-integration methodology find that in

The purpose of this study is to look at the impact of the (recent) Greek economic crisis on suicides and on deaths from traffic accidents. During the recent Greek economic crisis, mass media were reporting suicides either as a result of personal bankruptcies or unemployment. National and international media were reporting an unprecedented humanitarian crisis in Greece⁶. The opposite effect on traffic accidents did not receive much media attention. Why would an economic crisis reduce the number of traffic accidents? As mentioned above, during recessions there is less traffic and therefore less accidents. However, in Greece's case, during the recent economic crisis there were additional reasons. The Greek government increased the fixed amount car owners must pay to have the right to use their vehicle. It is a toll on a car's license plate. This tax burden does not depend on how many times the car is used. It is a fixed cost. The government also increased the tax on gasoline, which, *ceteris paribus*, reduces the car use. These two government policies have had at least two impacts. First, many car owners returned the license plates to the Greek authorities, and, by doing so, they totally removed their cars from traffic. Second, the remaining cars in traffic were used less because of higher gasoline prices. If the number of traffic accidents are proportional to cars in circulation at any moment in time, then both taxes should reduce the number of deaths from traffic accidents.

The evidence presented in this study shows that, after the recent economic crisis, fatal traffic accidents have decreased but suicides have increased. The overall outcome is positive: more lives were "saved" from traffic accidents than lost due to committed suicides. There are, however, a number of strong differences between the two types of life fatalities which are not addressed in this paper. First, suicides are to a certain extent an individual decision⁷. Traffic accidents are not. Second, and even more important, the average age of those who die as a result of a traffic accident is lower than the age of those who committed suicides. For example, in the Greek case,

Japan divorce and fertility rates were more important than per capita income and unemployment. In general, suicides appear to be better explained by the individual circumstances rather than aggregate economic fluctuations.

⁵Studies examine the role of fuel prices, taxes and subsidies and their impact on traffic accidents. For example, Parry et al (2007) discuss fuel tax impacts on pollution, congestion, and accidents.

⁶ There are many reports. For an example, see

<http://www.theguardian.com/commentisfree/2013/feb/11/greece-humanitarian-crisis-eu>

⁷As Huguelet et al (2007, p. 188) state "[P]sychiatric illness is a major contributing factor, as more than 90% of suicides are accompanied by such a diagnosis across different cultural backgrounds".

during the 2000-2012 period the average age of those dying from a suicide was 51 years. The average age of all people died in traffic accidents was 45 years. In the first case, those under forty, who committed suicides, were 18% of the total number of suicides. In deaths from traffic accidents the same number was 28%. Third, an economic crisis has other detrimental effects such as child malnutrition which may not have an immediate fatal impact but it can lead to a death in the future⁸. Fourth, the use of mass transportation, instead of private cars, reduces environmental pollution. These important issues are not discussed in this paper as the main focus is to shed light on the impact of economic crisis on suicides and deaths from traffic accidents. The emphasis is on the recent economic crisis.

This study is organized in six sections, including this introduction. Section two reports and discusses the Greek summary statistics on suicides, deaths from traffic accidents and their sum. For each variable, two specifications are reported. The total number of deaths and the number of deaths per million of people. Section three presents summary statistics of the economic explanatory variables and examines the time series properties of all variables, the regressand and the explanatory variables. Section four provides estimates of the impacts and effects of economic variables on suicides and deaths from traffic accidents using a very simple regression model. Section five discusses some policy aspects and section six concludes.

2. The Descriptive Data on Suicides and Deaths from Traffic Accidents

Greek data on deaths, including their causes, exist since the 19th century. They are collected by the National Statistical Authority of Greece from registry offices. In this study, data from 1960 are used and compared with aggregate economic variables which describe the state of the economy such as the Gross Domestic Product (GDP), per capita income and the unemployment rate. Data on these economic variables are retrieved from Eurostat's Aggregate Macro Economic (AMECO) database and they are available since 1960.

Summary statistics of suicides and deaths from traffic variables are reported in Table 1. The first three columns of the table give the total number of suicides, the

⁸Cervero-Liceras et al (2015) used a qualitative approach and found that in the Spanish region of Valencia the recent economic crisis increased malnutrition. However, an economic crisis in rich countries such as Spain and Greece may affect malnutrition because the fiscal consolidation costs is paid by poor households. It is not an issue of income but of income distribution and welfare policies.

total number of deaths from traffic accidents and the sum of the two. The last three columns are the same variables expressed in per million of people. On average, the number of deaths from traffic accidents is five times higher than the number of suicides. Column (1) of Table 1 shows that the maximum number of suicides was 508 (happened in 2012) and the minimum was 239 (1972). As can be seen from Column (2), the maximum number of deaths due to traffic accidents was 2543 (1996) and the minimum was 388 (1960). The sum of the two fatalities is given in Column (3). The average value was 2007 with a maximum of 2899 (1996) deaths and a minimum of 706 (1960) deaths.

Table 1. Summary Statistics of Suicides and Death from Traffic Accidents, 1960-2012

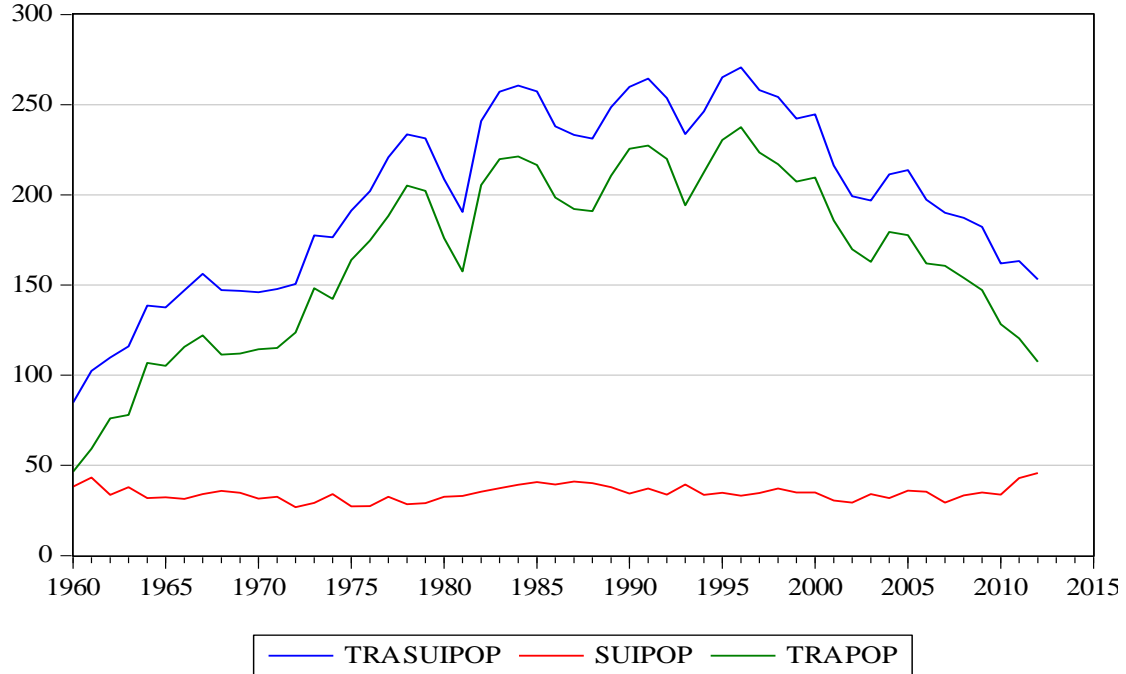
	SUI (1)	TRA (2)	TRASUI (3)	SUIPOP (4)	TRAPOP (5)	TRASUIPOP (6)
Mean	344	1664	2007	35	165	200
Median	351	1794	2169	34	175	202
Maximum	508	2543	2899	46	237	271
Minimum	239	388	706	27	47	85
Std. Dev.	57	565	591	4.2	49	49

The last three columns of Table 1 give the number of suicides, deaths from traffic accidents and the total number of deaths per one million people. Figure 1 graphs these three variables from 1960 to 2012. A number of points are in order here. First, the number of suicides remain relatively stable. They range from 27 to 46 suicides per million of Greeks. In the beginning of the 1960s, they were over 40 deaths. They had drastically decreased throughout the 1960s and the 1970s. They rebounded during the mid-1980s and have declined during the next decades. They have started rise again after the recent crisis in 2010. Over this long period of time, it appears that suicides are not affected by the constant rise in real GDP and the rise in real per capita income. This is further investigated below in this paper.

Second, deaths from traffic accidents rise consistently throughout the 1960s, 1970s and 1980s but they have been declining since the mid-1990s. Similar are the trends in the total number of deaths. As was the case with the long-run trend of suicides, the trend in deaths from traffic accidents and total deaths do not relate to the long run tendency of the economic variables of real GDP and real per capita income which have been constantly growing. As is obvious from Figure 1, the trend of deaths

from traffic accidents is non-linear. There is an upward trend up to the mid-1990s and a declining trend thereafter.

Figure 1. Suicides and Deaths from Traffic Accidents, 1960-2012



Third, as can be seen from Figure 1, during the current crisis (post 2009 period), both suicides and deaths from traffic accidents have been affected by the decrease in the rate of growth of GDP and the high increase in the official data of unemployment. However, deaths from traffic accidents have started decreasing from mid-1990s, showing a remarkable decline from over 237 deaths per million of people in 1996 to 107 deaths per million of population in 2012. The post crisis years is a continuation of this trend. In 2010, deaths from traffic accidents per million of people decreased by 12.93% relative to 2009. This is the highest annual decrease in the entire period under consideration. In 2011 and 2012, they decreased by 6.1% and 10.8% respectively. The three years of the crisis, for which data exist (2010-2012), the overall decline was 27%, from 147 in 2009 to 107 deaths per million of people. It seems that the recent economic crisis did not affect the long term declining trend but it increased the speed by which the number of deaths have declined. This is related to the regression analysis and is further discussed later in section four.

Fourth, it appears that the picture depicted in Figure 1 cannot be explained by aggregate economic variables alone. The number of cars have been increasing but at the same time great improvements were made in the building of new and safer

highways⁹. The relative stable number of suicides reflect that non-economic factors may be more important. It is therefore necessary to examine the time series properties of suicides and deaths from traffic accidents and compare them with the economic crisis variables such as GDP, GDP growth, per capita income, per capita income growth, the unemployment rate and the rate of growth of the unemployment rate. In the econometric jargon these variables must be examined if they possess the same stochastic (common) trends. This is done in the next section of this paper.

3. Time Series Properties of the Variables

Three variables account for the business cycle fluctuations and are used in this study as explanatory variables of suicides and the number of deaths from traffic accidents: GDP, per capita income and unemployment rate. For reasons explained below, the most important explanatory factors are annual percentage changes of these three variables. Summary statistics of these variables and their growth rates are given in Table 2.

Table 2. Summary Statistics of Explanatory Variables, 1960-2012

	GDP (bn €)	GDPGR (%)	GDPPOP (€)	GDPPOPGR (%)	UR (%)	URGR (%)
Mean	145	3.23	14236	2.66	7.16	4.18
Median	141	3.30	14331	2.84	6.75	1.80
Maximum	251	12.82	22485	11.93	24.5	48.15
Minimum	44	-8.85	5239	-8.60	1.7	-32.26
Std. Dev.	56	4.77	4457	4.64	4.2	16.83

The most important property of a time series is its stationarity. If a time series is stationary, its mean and variance do not change over time. For stationary time series, the simple ordinary least square (OLS) regression estimation gives meaningful results. If a series is non-stationary, its probability distribution changes overtime. Such series should be differenced (de-trended) to become stationary. How many times should be differenced to produce a stationary series determines the order of integration.

Most macroeconomic time series have stochastic processes which require one de-trending in order to become stationary. If they are required to be differenced only one to become stationary, such processes are called unit root processes or integrated of

⁹ Nguyen-Hoang & Yeung (2014) found that investment in highways reduced traffic fatalities in USA.

order one I(1). In a regression model, it is important to check if the variables have the same unit root process. Then and only then, they can be used in the same regression equation. This is necessary but not sufficient. The variables not only must have the same order of integration but they must be co-integrated in order to verify whether a non spurious relation exist between them.

Thus, each variable used in the empirical analysis should be first checked for the order of integration. Table 3 reports the order of integration of all variables used in this study using various unit root tests such as the Augmented Dickey-Fuller Test, the Phillips-Perron test and the DF-GLS test.

Table 3. Order of Integration

Variable	Code Name	Order of Integration	Notes
Number of Suicides	SUI	I(0)	With a trend and intercept
Suicides per Million of People	SUIPOP	I(0)	With a trend and intercept
Deaths from Traffic Accidents	TRA	I(1)	All possible specifications
Annual Percentage Changes of Deaths from Traffic Accidents	TRAGR	I(0)	All possible specifications
Deaths from Traffic Accidents per Million People	TRAPOP	I(1)	All possible specifications
Annual Percentage Changes of Deaths from Traffic Accidents per Million People	TRAPOPGR	I(0)	All possible specifications
Gross Domestic Product	GDP	I(1)	All possible specifications
GDP growth	GDPGR	I(0)	All possible specifications
Per Capita Income	GDPPOP	I(1)	All possible specifications
Growth of per Capita Income	GDPPOPGR	I(0)	All possible specifications
Unemployment Rate	UR	I(2)	All possible specifications
UR Growth	URGR	I(0)	All possible specifications

Data Source: Suicides and Deaths from Traffic Accidents are from the Greek National Statistical Authority (ELSTAT). The economic data are retrieved from Eurostat's Aggregate Macro Economic (AMECO) online data base.

The total number of suicides and the suicide rate are stationary variables. As shown in Figure 1, the suicide rate does not grow over time. It is a relevant stable (stationary) process. On the other hand, deaths from traffic accidents (level and rate) is a non-stationary process. They are integrated of order one I(1). The rate of growth of deaths from traffic accidents is a stationary process, it is a I(0) process.

The three economic variables (GDP, per capita income and the unemployment rate) are non-stationary processes. The first two are integrated of order one and the unemployment rate is integrated of order two. The rates of growth of these variables

are all stationary. These are the variables that are used in the simple regressions presented in the next section.

4. Estimation Results of Simple Regression Models

This section uses a very simple empirical regression model to account for the economic crisis impact on suicides¹⁰ and on deaths from traffic accidents¹¹. If all variables of the regression model are stationary, i.e. $I(0)$, then ordinary least squares can apply to give meaningful, unbiased and efficient estimates. If variables are integrated of the same order, then a co-integration will show whether a real (and not a spurious) relation exists between these two variables. Finally, if variables are integrated of different order, then it is concluded that these variables are not related.

The Impact on Suicides

The actual number of suicides and the suicide rate (number of suicides per million of people) are used as dependent variables. Both variables are stationary implying that their mean and variance remain relatively stable over the years. All three economic variables, GDP, per capita income and the unemployment rate are non-stationary. Thus, a regression of suicides on these variables will not give meaningful results.

However, a business cycle is not so much about levels as it is about growths. Low or even negative growth rates of GDP or of per capita income growth is what defines a recessionary period (an economic crisis). Both GDP growth and the annual percentage change in per capita income are stationary, i.e. integrated of order zero. Also, the annual percentage change of the unemployment rate is stationary. These

¹⁰Chen et al (2012) reviews the empirical evidence on suicides. This study discusses the number of dependent and independent variables used in the empirical literature of suicides. The explanatory variables include income, human capital (education), income inequality, economic growth, unemployment, labor participation, divorce, birth rate, migration, population, household size, age, gender, religion, homicide, geographical and climatic conditions, civil liberty and quality of governance, health status, alcohol consumption, etc.

¹¹Similar to suicide, empirical studies on deaths from traffic accidents use as explanatory variable GDP, economic growth, per capita income, unemployment, capital investments in highways, age, alcohol consumption, cars per capita, population, crimes etc. See for example the studies by Castillo-Manzano et al (2015), Krüger (2013), Mercer (1987), Nguyen-Hoang & Yeung (2014), Parry (2007), and Winston (2013).

three annual percentage changes of the economic variables are used in a simple regression model of suicides and the number of deaths from traffic accidents.

An important issue is whether these variables have a linear or a non-linear impact on suicides. A scatter diagram of the relation between suicide and the rate of growth of GDP and the rate of growth of the unemployment rate shows that these relation appear to be nonlinear. Thus, the suicide equation is estimated with a non-linear specification. Only statistical significant parameter estimates are reported. Lagged terms are used to remove serial correlation from the residuals as this is determined by the Breusch-Godfrey Serial Correlation LM Test and the DW statistic.

Table 4 reports the estimation results of the total number of suicides (SUI) and the suicide rate measured as the number of suicides per million of people (SUIPOP). The explanatory variables explain 76.77% of the variations of total suicides and 53.52% of the variations in suicides per million of people.

The rate of growth of GDP exerts a strong non-linear effect on suicides. At low levels of economic growth, an increase in the economic growth has a negative effect on the number of suicides but at a decreasing rate as is shown by the positive sign of the squared term of GDP growth. In other words, at higher rates of growth this effect is diminishing. It can even turn positive. In Greece's case, growth rates above 10% have been associated with a positive impact on suicides, i.e. they increase the number of suicides. This might be related to the literature of the economics of happiness as this has been developed over the years by Richard Easterlin¹².

Even though GDP has increased drastically the last decades, average happiness remains constant. Clark et al (2008) find that an increase in income increases happiness albeit at a decreasing rate. Very high economic growth rates may exceed that threshold of happiness maximization. This might explain why the suicide rate is high in relatively rich countries. An alternative explanation might be the change in relative income. An increase in local income has an opposite and sometimes larger negative impact than the effect of own income. Disappointment of one's economic position in the local society may explain suicidal behavior. Daly & Wilson (2006), using data from USA, find that suicide is a function of relative income and parasuicide is lower in high unemployment areas. In very high economic growth

¹²A recent study developing his idea is Easterlin (2013). Also see the United Nations Report edited by Helliwell et al (2103). A useful discussion of this issue is given by Deaton & Stone (2013).

environment, some people might lack behind and this might cause an increase in unhappiness and therefore suicides.

Table 4. Suicide Regression Results

Variable	Suicides (SUI)	Suicides per Million (SUIPOP)
Constant	45.16 (1.34)	11.21 (2.76)***
Lag-1	0.42 (3.50)***	0.37 (3.09)***
Lag-2	0.46 (3.75)***	0.32 (2.57)***
GDPGR	-3.86 (2.83)***	-0.52 (4.93)***
GDPGR ²	0.28 (2.12)**	0.03 (2.24)**
URGR	0.60 (1.92)*	-
Adjusted R ²	0.7677	0.5352
Durbin-Watson	2.07	1.87
Period	1961-2012	1962-2012

Notes: t-values in parentheses. ***1% level of significance. **5% level of significance. *10% level of significance. The R² is adjusted for the degree of freedom of the equation.

Similar with the GDP growth, is the impact of the growth of per capita income on the number of suicides per million of population. At low levels of per capita income growth, it is negative but this impact is decreasing. The scatter diagram of the two variables (not reported) show that up to 8% growth rate of per capita income the impact on suicides per million of people is negative. For higher growth rates, the impacts turns positive.

The unemployment rate has the predicted positive impact on the number of suicides but its effect is not so strong as is shown by its low t-value. In the second regression of suicides per million of people, the growth of the unemployment rate was not statistical significant. In both regressions, the squared term of the unemployment growth rate was not statistical significant (not reported in Table 4). This confirms the results of other studies that find mixed evidence of unemployment on suicides (Noh, 2009).

The regression results of Table 4 confirm that economic crises (negative rates of economic growth) increase the number of suicides. This is the dreadful impact of an

economic crisis. The question is whether an economic crisis reduces the number of deaths from traffic accidents.

The Impact on Deaths from Traffic Accidents

The number of deaths from traffic accidents are non-stationary. However, as is shown in Table 3, GDP and per capita income are integrated with the same order. In this case, the two variables - deaths from traffic accidents and GDP or per capita income - may be co-integrated. The Johansen cointegration test shows that these two variables are not co-integrated and the strong relation that exists between these two variables is a spurious one. The co-integration tests (not reported) were performed for all possible specifications: an intercept, a linear trend and a quadratic trend. The two variables do not have the same stochastic (common) trend. Thus, a regression with these variables makes no sense.

Table 3 shows that the rate of growth of deaths from traffic accidents and the rate of growth of deaths per million of people are stationary. These two variable are the dependent variables in a simple regression model with the rate of growth of GDP and the rate of growth of income per capita as their corresponding explanatory variables. All these variables are stationary. The results are presented in Table 5.

Table 5. Deaths from Traffic Accidents Regression Results

TRAGR	-0.38 (0.22)	0.97GDPGR (3.14)***	Adjusted R ² =0.1488	DW=1.72
TRAPOPGR	-0.31 (0.19)	0.93GDPPPOPGR (3.0)***	Adjusted R ² =0.1337	DW=1.71

Notes: t-values in parentheses. ***1% level of significance. **5% level of significance. *10% level of significance. The R² is adjusted for the degree of freedom of the equation.

The rate of growth of the unemployment rate was not statistical significant and for this reason the results are not reported in either regression. Also, non-linear terms of the explanatory variables were not statistical significant. The results are also not reported. Other variables have been used as explanatory variables but they were not statistical significant such as the output trend.

Deaths from traffic accidents increase with economic growth. The higher the rate of growth of output, the higher the number of deaths from traffic accidents. Thus, a

recession (negative rates of growth of GDP) would reduce the number of deaths from traffic accidents.

The rate of growth of GDP can be considered as a proxy for an increase in kilometers travelled. During booms more cars (people) travel either to work or for leisure increasing the risk of fatal traffic accidents.

The Overall Impact

Table 6 reports the regression results of the total number of deaths resulted from suicides and traffic accidents. The unemployment rate was not statistical significant. On the issue of stationarity and co-integration the analysis is similar with the deaths from traffic accidents. Thus, the rate of growth of total deaths and the rate of growth of deaths per million of people are used.

Table 6. Regression Results of the Total Impact

TRASUIGR	0.05 (0.04)	0.6GDPGR (2.69)***	R ² =0.1085	DW=1.6
TRASUIPOPGR	-0.07 (0.06)	0.57GDPPPOPGR (2.48)***	R ² =0.09	DW=1.6

Notes: t-values in parentheses. ***1% level of significance. **5% level of significance. *10% level of significance. The R² is adjusted for the degree of freedom of the equation.

The rate of growth of output has a strong positive impact on the growth rate of total deaths. Similarly, the rate of growth of per capita income increases the rate of growth of deaths per million of people. These results are similar to many other studies measured in the introduction that economic growth increases the overall deaths which primarily is the result of traffics accidents and other causes such as stress from working hard during times of economic booms.

In both regressions the coefficient of determination is very low implying that other variables may be more important in explaining traffic accidents as these also have been demonstrated in the relevant literature such as age, alcohol consumption, infrastructure, availability of affordable means of mass transportation etc.

Summing up, the results show that the overall impact of the economic crisis on deaths from the two sources is negative. A recession has its goods and bads. One of the good things is that it reduces the overall death rate from fatal traffic accidents and suicides.

5. What are the Policy Implications, if any?

In a recent paper (Branas et al 2015), the authors concluded that "[O]ur analysis points to a significant increase in suicides following austerity-related events in Greece. As future austerity measures are considered, greater weight should be given to the unintended mental health consequences of these measures". This conclusion is as absurd as the argument that austerity measures should be promoted because it reduces significantly the deaths from traffic accidents.

The purpose of economic policy that deals with business cycles (economic crises), the so called stabilization policies, does not aim at affecting either the number of suicides or the number of deaths from traffic accidents. Social and welfare policies should deal with these social scourge. Similarly, policies that promote economic growth are not justified on the ground of suicides and traffic accidents and none will be made here. However, a discussion which might re-direct the attention from aggregate economic impacts on suicides and traffic accidents is offered in this section.

Undoubtedly suicides are more sensitive than deaths from traffic accidents even though personally I consider the latter more important in Greece. Put it in economic terms, at the margin, I would spend more government money to reduce deaths from traffic accidents rather than to reduce the number of suicides. In traffic accidents, more "innocent" and younger people are killed relative to suicides. Younger people's lives not only have more economic value but they weight more in the moral value system of the great majority of people. But spending more money may not be effective either. Ross et al (2012) found that in USA state government spending on mental health did not have a statistical significant effect on suicides. According to the authors, other policies such as divorce prevention or support, assistance to low income individuals are considered more effective. Windfuhr (2009) provides a review of strategies to prevent suicides.

Unfortunately, in the recent Greek economic crisis, the apparent increase in suicides was used by political parties as part of their tactics to win votes, especially from 2011 and up to the elections of May 2012 and June 2012. The Greek and the international mass media had a wide coverage of every single suicide. In a way and unintentionally they were "promoting" this desperate human action. It is difficult to disentangle what percentage of suicides during this period was the result of this "publicity" effect. After the 2012 dual elections, suicides are not part of the political

debate anymore. It was not part of the debate of the euro elections in June 2014 and the national elections of January 2015. Data do not exist after 2012 on suicides to see whether they have decreased or not.

Suicides are personal decisions and relate very much to the mental condition of the individual as is found by many studies (Huguelet et al , 2007). The analysis of such mental conditions is not the subject of economic science. Medical sciences and psychology are the relevant disciplines to deal with this issue. Of course, there are circumstances which force an individual, with a certain mental state, to commit a suicide. Such circumstances include for example divorce, failure to meet personal goals such as entering into the University, the guilt of a committed crime, etc. Social, religion and cultural norms might affect the decision to commit a suicide¹³. Most probably the best government policy in such cases is to promote the psychological support for these people. In Greece, the orthodox church has played an important role in limiting the number of suicides¹⁴. Note that psychological support does not change the circumstances but helps the person to deal with them without resulting to a suicide.

This study has found that the rate of growth of the unemployment rate increases the number of suicides. Thus, unemployed people need not only economic assistance such unemployment insurance and help finding a job by psychological support as well. Such assistance is usually provided by employment counselors who are usually trained psychologists.

The policy implications of the deaths from traffic accidents is even more irrelevant to the findings of this study. By no means, the government should retard economic growth just because this reduces the number of deaths from traffic

¹³ In an absurd way, the religion impact is so strong that some radical religious groups have used it as a weapon to promote their ideas by preparing and implementing suicide attacks. Berman & Laitin (2008) provide an interesting (economic) analysis of suicidal attacks in the name of religion.

¹⁴The religion aspect is very strong among Greek families but it has been declining. Actually, anecdotal evidence states that many deaths in the past that were suicides were reported as normal deaths for two reasons. First, the Greek Orthodox church does not accept to provide a religious funeral if a person committed a suicide. Second, a family considers a suicide a stigma and a social burden for the epigones. In the empirical literature, Helliwell (2007) has found that religion (belief and church attendance) reduces suicides. Bussu et al (2013) find similar evidence for Italy. Greece, Italy and Spain have one of the lowest suicide rates as is shown in the comparative study by Andrès (2005) and this might relate to their religion but social norms as well.

accidents. Other policies should be promoted such as the improvement of the transportation infrastructure, the promotion of the use of the mass media of transportation, the education of the youth to drive safer, the monitoring and the implementation of the law, especially the "suicidal" practice of drinking and driving which kills mostly young people, subsidies and taxes on car and gasoline use, etc. These have been discussed in the relevant economic literature.

Summing up this discussion, there is no much that (macro) economic and stabilization policy can do to reduce the number of suicides and the number of deaths from traffic accidents. Economic crises, as the stoic philosophers have stated, they have bad and good things. Social and welfare policies should take care of these social problems and not macroeconomic policy. Unfortunately, for political reasons, in Greece suicides have been used as an argument in the discussion of economic policy, particularly the fiscal consolidation measures. Of equal absurdity is the counter-argument that economic recessions are desirable because, overall, reduce the number of deaths from suicides and from traffic accidents.

6. Conclusions

This paper has shown that the recent economic crisis in Greece increased the number of suicides but it decreased the number of deaths from traffic accidents. This is the unintentional bad and good thing of the downturn in the business cycle. It is not suggested that government macroeconomic policies should be designed in such a way as to take these bad and good effects of economic crises into consideration. On the contrary, the purpose of economic policy is to stabilize business cycles using the traditional tools of fiscal, monetary and industrial policy. Suicides and traffic accidents can be reduced using other government interventions. A detailed discussion of these social and welfare policies were not the subject of this paper.

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